Valuation and characteristic of bonds and stocks

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A bond is a promissory note issued by a business or a governmental unit. Treasury bonds, sometimes referred to as government bonds, are issued by the Federal government and are not exposed to default risk. Corporate bonds are issued by corporations and are exposed to default risk. Different corporate bonds have different levels of default risk, depending on the issuing company's characteristics and on the terms of the specific bond.

Municipal bonds are issued by state and local governments. The interest earned on most municipal bonds is exempt from federal taxes, and also from state taxes if the holder is a resident of the issuing state. Foreign bonds are issued by foreign governments or foreign corporations. These bonds are not only exposed to default risk, but are also exposed to an additional risk if the bonds are denominated in a currency other than that of the investor's home currency. The par value is the nominal or face value of a stock or bond.

The par value of a bond generally represents the amount of money that the firm borrows and promises to repay at some future date. The par value of a bond is often $1, 000, but can be $5, 000 or more. The maturity date is the date when the bond's par value is repaid to the bondholder. Maturity dates generally range from 10 to 40 years from the time of issue. A call provision may be written into a bond contract, giving the issuer the right to redeem the bonds under specific conditions prior to the normal maturity date.

A bond's coupon, or coupon payment, is the dollar amount of interest paid to each bondholder on the interest payment dates. The coupon is so named because bonds used to have dated coupons attached to them which investors could tear off and redeem on the interest payment dates. The

coupon interest rate is the stated rate of interest on a bond. In some cases, a bond's coupon payment may vary over time. These bonds are called floating rate bonds. Floating rate debt is popular with investors because the market value of the debt is stabilized.

It is advantageous to corporations because firms can issue long-term debt without committing themselves to paying a historically high interest rate for the entire life of the loan. Zero coupon bonds pay no coupons at all, but are offered at a substantial discount below their par values and hence provide capital appreciation rather than interest income. In general, any bond originally offered at a price significantly below its par value is called an original issue discount bond (OID).

Most bonds contain a call provision, which gives the issuing corporation the right to call the bonds for redemption. The call provision generally states that if the bonds are called, the company must pay the bondholders an amount greater than the par value, a call premium. Redeemable bonds give investors the right to sell the bonds back to the corporation at a price that is usually close to the par value. If interest rates rise, investors can redeem the bonds and reinvest at the higher rates. A sinking fund provision facilitates the orderly retirement of a bond issue.

This can be achieved in one of two ways: The company can call in for redemption (at par value) a certain percentage of bonds each year. The company may buy the required amount of bonds on the open market. 1. 1Bond Valuation The value of a bond is simply the present value of the future interest payments and maturity value discounted at the bondholder's

required rate of return. This may be expressed as: Vb=[pic] where It = the dollar interest to be received in each payment M= the par value of the bond at maturity kb= the required rate of return for the bondholder

N= the number of periods to maturity In other words, we are discounting the expected future cash flows to the present at the appropriate discount rate (required rate of return). 1. 2Convertible bonds Convertible bonds are securities that are convertible into shares of common stock, at a fixed price, at the option of the bondholder. Bonds issued with warrants are similar to convertibles. Warrants are options which permit the holder to buy stock for a stated price, thereby providing a capital gain if the stock price rises. Income bonds pay interest only if the interest is earned.

These securities cannot bankrupt a company, but from an investor's standpoint they are riskier than " regular" bonds. The interest rate of an indexed, or purchasing power, bond is based on an inflation index such as the consumer price index (CPI), so the interest paid rises automatically when the inflation rate rises, thus protecting the bondholders against inflation. 1. 3Sinking Funds and Call Provisions A call provision is a provision in a bond contract that gives the issuing corporation the right to redeem the bonds under specified terms prior to the normal maturity date.

The call provision generally states that the company must pay the bondholders an amount greater than the par value if they are called. The additional sum, which is called a call premium, is typically set equal to one year's interest if the bonds are called during the first year, and the premium declines at a constant rate of INT/n each year thereafter. A sinking fund

provision is a provision in a bond contract that requires the issuer to retire a portion of the bond issue each year. A sinking fund provision facilitates the orderly retirement of the bond issue.

The call privilege is valuable to the firm but potentially detrimental to the investor, especially if the bonds were issued in a period when interest rates were cyclically high. Therefore, bonds with a call provision are riskier than those without a call provision. Accordingly, the interest rate on a new issue of callable bonds will exceed that on a new issue of non-callable bonds. Although sinking funds are designed to protect bondholders by ensuring that an issue is retired in an orderly fashion, it must be recognized that sinking funds will at times work to the detriment of bondholders.

On balance, however, bonds that provide for a sinking fund are regarded as being safer than those without such a provision, so at the time they are issued sinking fund bonds have lower coupon rates than otherwise similar bonds without sinking funds. 2. 0The Relationship between Bond Prices and Interest Rates Bond prices and interest rates are inversely related; that is, they tend to move in the opposite direction from one another. A fixed-rate bond will sell at par when its coupon interest rate is equal to the going rate of interest, rd.

When the going rate of interest is above the coupon rate, a fixed-rate bond will sell at a " discount" below its par value. If current interest rates are below the coupon rate, a fixed-rate bond will sell at a " premium" above its par value. The shorter the maturity of the bond, the greater the risk of a decrease in interest rates. The risk of a decline in income due to a drop in

interest rates is called reinvestment rate risk. Interest rates fluctuate over time, and people or firms who invest in bonds are exposed to risk from changing interest rates, or interest rate risk.

The longer the maturity of the bond, the greater the exposure to interest rate risk. Interest rate risk relates to the value of the bonds in a portfolio, while reinvestment rate risk relates to the income the portfolio produces. No fixed-rate bond can be considered totally riskless. Bond portfolio managers try to balance these two risks, but some risk always exists in any bond. Another important risk associated with bonds is default risk. If the issuer defaults, investors receive less than the promised return on the bond.

Default risk is influenced by both the financial strength of the issuer and the terms of the bond contract, especially whether collateral has been pledged to secure the bond. The greater the default risk, the higher the bond's yield to maturity. 3. 0Default risks Corporations can influence the default risk of their bonds by changing the type of bonds they issue. Under a mortgage bond, the corporation pledges certain assets as security for the bond. All such bonds are written subject to an indenture, which is a legal document that spells out in detail the rights of both the bondholders and the corporation.

A debenture is an unsecured bond, and as such, it provides no lien against specific property as security for the obligation. Debenture holders are, therefore, general creditors whose claims are protected by property not otherwise pledged. Subordinated debentures have claims on assets, in the event of bankruptcy, only after senior debt as named in the subordinated

debt's indenture has been paid off. Subordinated debentures may be subordinated to designated notes payable or to all other debt. 1. What is the yield to maturity on a 10-year, 9 percent annual coupon,

We know this because the bond is selling at a discount, and discount bonds always have r > coupon rate. If the bond were priced at $1, 134. 20, then it would be selling at a premium. In that case, it must have a YTM that is below the 9 percent coupon rate, because all premium bonds must have coupons which exceed the going interest rate.